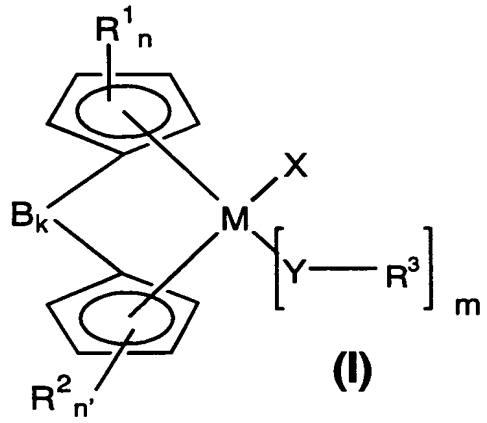
We claim:

1. A compound of the formula (I),



(I)

where

M is a metal of transition group III, IV, V or VI of the Periodic Table of the Elements,

R^1 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom or a C_1-C_{40}-group, or R^1 is a C_1-C_{30}-group, or two or more radicals R^1 may be connected to one another in such a way that the radicals R^1 and the atoms of the cyclopentadienyl ring which connect them form a C_4-C_{24}-ring system which may in turn be substituted,

R^2 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom or a C_1-C_{40}-group, or R^2 is a C_1-C_{30}-group, or two or more radicals R^2 may be connected to one another in such a way that the radicals R^2 and the atoms of the cyclopentadienyl ring which connect them form a C_4-C_{24}-ring system which may in turn be substituted,

R^3 are identical or different and are each a C_1-C_{40}-group,

X is a halogen atom,

Y is an element of main group VI of the Periodic Table of the Elements or a fragment CH, CR^3_2, NR^3, PR^3 or $P(=O)R^3$,

n is from 1 to 5 when k = 0, and n is from 0 to 4 when k = 1,

n′ is from 1 to 5 when k = 0, and n′ is from 0 to 4 when k = 1,

m is from 1 to 3, preferably 1,

k is zero or 1, with k = 0 giving an unbridged metallocene and k = 1 giving a bridged metallocene, and

B is a bridging structural element between the two cyclopentadienyl rings.

2. A compound as claimed in claim 1, wherein

M is Ti, Zr or Hf,

R^1 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom, C_1-C_{20}-alkyl, C_1-C_{10}-fluoroalkyl, C_1-C_{10}-alkoxy, C_6-C_{20}-aryl, C_6-C_{10}-fluoroaryl, C_6-C_{10}-aryloxy, C_2-C_{10}-alkenyl, C_7-C_{40}-arylalkyl, C_7-C_{40}-alkylaryl or C_8-C_{40}-arylalkenyl,

or R^1 is C_1-C_{25}-alkyl, C_2-C_{25}-alkenyl, C_3-C_{15}-alkylalkenyl, C_6-C_{24}-aryl, C_5-C_{24}-heteroaryl, C_7-C_{30}-arylalkyl, C_7-C_{30}-alkylaryl, fluorinated C_1-C_{25}-alkyl, fluorinated C_6-C_{24}-aryl, fluorinated C_7-C_{30}-arylalkyl, fluorinated C_7-C_{30}-alkylaryl or C_1-C_{12}-alkoxy, or two or more radicals R^1 may be connected to one another in such a way that the radicals R^1 and the atoms of the cyclopentadienyl ring which connect them form a C_4-C_{24}-ring system which may in turn be substituted,

R^2 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom, C_1-C_{20}-alkyl, C_1-C_{10}-fluoroalkyl, C_1-C_{10}-alkoxy, C_6-C_{14}-aryl, C_6-C_{10}-fluoroaryl, C_6-C_{10}-aryloxy, C_2-C_{10}-alkenyl, C_7-C_{40}-arylalkyl, C_7-C_{40}-alkylaryl or C_8-C_{40}-arylalkenyl,

or R^2 is C_1-C_{25}-alkyl, C_2-C_{25}-alkenyl, C_3-C_{15}-alkylalkenyl, C_6-C_{24}-aryl, C_5-C_{24}-heteroaryl, C_7-C_{30}-arylalkyl, C_7-C_{30}-alkylaryl, fluorinated C_1-C_{25}-alkyl, fluorinated C_6-C_{24}-aryl, fluorinated C_7-C_{30}-arylalkyl, fluorinated C_7-C_{30}-alkylaryl or C_1-C_{12}-alkoxy, or two or more radicals R^2 may be connected to one another in such a way that the radicals R^2 and the atoms of the cyclopentadienyl ring which connect then form a C_4-C_{24}-ring system which may in turn be substituted,

R^3 are identical or different and are each C_1-C_{25}-alkyl, C_2-C_{25}-alkenyl, C_3-C_{15}-alkylalkenyl, C_6-C_{24}-aryl, C_5-C_{24}-heteroaryl, C_7-C_{30}-arylalkyl, C_7-C_{30}-alkylaryl, fluorinated C_1-C_{25}-alkyl, fluorinated C_6-C_{24}-aryl, fluorinated C_7-C_{30}-arylalkyl or fluorinated C_7-C_{30}-alkylaryl,

X is chlorine,

Y is oxygen, sulfur or NR^3,

n is from 1 to 5 when k = 0, and n is from 0 to 4 when k = 1,

n' is from 1 to 5 when k = 0, and n' is from 0 to 4 when k = 1,

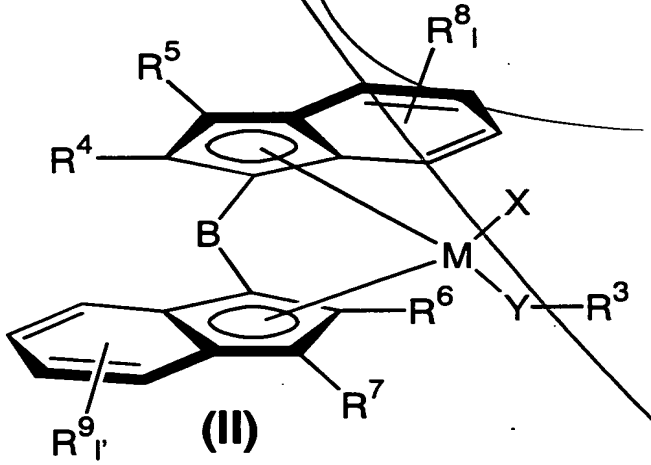
m is 1 and

k is 1.

3. A compound as claimed in claim 1, wherein the formula (I) represents a bridged metallocene compound in which k is 1.

4. A compound as claimed in claim 3, wherein the formula (I) corresponds

to the formula (II)



(II)

where

M is Ti, Zr or Hf,

R^3 are identical or different and are each a C_1-C_{30}-group,

R^4, R^6 are identical or different and are each a hydrogen atom or a C_1-C_{20}-group,

R^5, R^7 are identical or different and are each a hydrogen atom or a C_1-C_{20}-group,

R^8, R^9 are identical or different and are each a hydrogen atom, a halogen atom or a C_1-C_{20}-group, and two radicals R^8 or R^9 may form a monocyclic or polycyclic ring system which may in turn be substituted,

X is a halogen atom,

Y is an element of main group VI of the Periodic Table of the Elements or a fragment CH, CR^3_2, NR^3, PR^3 or $P(=O)R^3$,

l, l' are identical or different and are each an integer from zero to 4,

B is a bridging structural element between the two indenyl radicals.

5. A compound as claimed in claim 5 [sic], wherein, in the formula (II),

M is zirconium,

R^3 are identical or different and are each C_3-C_{10}-alkyl, C_6-C_{24}-aryl, C_5-C_{24}-heteroaryl, C_7-C_{30}-arylalkyl, C_7-C_{30}-alkylaryl, fluorinated C_6-C_{24}-aryl, fluorinated C_7-C_{30}-arylalkyl or fluorinated C_7-C_{30}-alkylaryl,

R^4, R^6 are identical or different and are each a hydrogen atom, C_1-C_{18}-alkyl, C_2-C_{10}-alkenyl, C_3-C_{15}-alkylalkenyl, C_6-C_{18}-aryl, C_5-C_{18}-heteroaryl, C_7-C_{20}-arylalkyl, C_7-C_{20}-alkylaryl, fluorinated C_1-C_{12}-alkyl, fluorinated C_6-C_{18}-aryl, fluorinated C_7-C_{20}-arylalkyl or fluorinated C_7-C_{20}-alkylaryl,

R^5, R^7 are identical or different and are each a hydrogen atom, C_1-C_{18}-alkyl, C_2-C_{10}-alkenyl, C_3-C_{15}-alkylalkenyl, C_6-C_{18}-aryl, C_5-C_{18}-heteroaryl, C_7-C_{20}-arylalkyl, C_7-C_{20}-alkylaryl, fluorinated C_1-C_{12}-alkyl, fluorinated C_6-C_{18}-aryl, fluorinated C_7-C_{20}-arylalkyl or fluorinated C_7-C_{20}-alkylaryl,

R^8, R^9 are identical or different and are each a hydrogen atom, a halogen atom, a linear or branched C_1-C_{18}-alkyl group, C_2-C_{10}-alkenyl, C_3-C_{15}-alkylalkenyl, a C_6-C_{18}-aryl group which may be substituted, C_5-C_{18}-heteroaryl, C_7-C_{20}-arylalkyl, C_7-C_{20}-alkylaryl, fluorinated C_1-C_{12}-alkyl, fluorinated C_6-C_{18}-aryl, fluorinated C_7-C_{20}-arylalkyl or fluorinated C_7-C_{20}-alkylaryl, and two radicals R^8 or R^9 may form a monocyclic or polycyclic ring system which may in turn be substituted,

X is chlorine,

Y is oxygen, sulfur or NR^3,

1, 1' are identical or different and are each 1 or 2,

B is a bridging structural element between the two indenyl radicals.

6. A catalyst comprising at least one compound as claimed in claim 1 and a support and, if desired, a cocatalyst.

7. A process for preparing a polyolefin in the presence of a catalyst as claimed in claim 6.

8. The use of a catalyst as claimed in claim 6 for olefin polymerization.